5110 0008

(343) Item 8

PROPERTY NAME: Tour of Ward Mining District

OTHER NAMES:

MINERAL COMMODITY(IES): Ag, Pb, Zn, Cu, Mo

TYPE OF DEPOSIT: Contact metasonatic, mineralized veins & dikes

ACCESSIBILITY:

OWNERSHIP: Joint venture- Ag King & Gulf Minerals (51%)

PRODUCTION:

HISTORY: See below

County: White Pine

Mining District: Ward

AMS Sheet: Ely

Quad Sheet: Ely 15'

Sec. 9,10, 15,16 , T 14N , R 63E

Coordinate (UTM):

North 4 3 2 8 | | | m

East 0 6 8 4 | | | m

Zone +11

DEVELOPMENT: Ag King has an office, warehouse/garage & core storage building near the Paymaster Mine. We did not visit the workings or drill sites up canyon because of the current drilling & cutting.

ACTIVITY AT TIME OF EXAMINATION: Currently doing explored drilling at 2 sites & preparing an area for an additional drill site.

GEOLOGY: The geology of the Ward Mining District is complicated but for the purpose of this report will be simplified.

Ground Info: The 1st discoveries in the area were around 1880. Hi-grade ore (galena Ag) was mined along N-W striking dikes which are thought to be emplaced at a late stage. The ore occurred in veins & as replacemnt pods which ran 10-80 oz/ton. Phillips became involved with the property in the late 60's. They reopened the Pay Master Tunnel.

Geology:

A west-striking ϟ normal faut called the Ward Gulch Fault has downdropped Penn-Perm. rocks (including the Riepe Springs limestone & Arcturus Fm) & Tertiary volcanic & intrusive rocks against the older Paleozoic section which includes the Ely limestone (which outcrops on the ridgecrest of Ward Mtn.), Chainman Shale, JoAnna limestone, Pilot Shale, & Guilmette Fm.

The mineralization in the E side of the district occurs in a NW belt N of the Ward Gulch Fault where the Paleozoic section is intruded by a 35 my old quartz monzonite porphyry which lies ≈ 2,000 below the surface. The porphyry body only intrudes up into the middle of the Guilmette Fm, but feeder dikes of the same composition but different textures intrude rocks higher in the section. Since the intrusive at Ward is more felsic in composition & younger than the Kimberly porphyry lying to the north, the two bodies are considered to be unrelated.

An interesting feature of the Ward porphyry is that it has a quick chill endos karn margin containing very fine grained quartz, pyrox & garnet with some moly mineralization However, information from deep drill holes indicate the main body of the porphyry is unmineralized. They are still drilling other undrilled parts of the stock which is

~~XXXXXXX~~ several miles across.

Most of the mineralization at Ward occurs in skarn rock associated with dikes intruding the JoAnna & Guilmette Fms. Apparently the Chainman shales were still wet when the porphyry intruded & acted as a cold, wet blanket, which sealed off the system.

Two old drill holes are located in the western part of the district. The recent drilling has been done on the E side. Because the new drillholes are spaced 200' apart & because the lode deposits are along veins & dikes, Ag King does not know their ore reserves. In the Caroline open pit area of the district they are drilling NC, then they NX into the JoAnna. Most of their holes are ≈ 1,800-2,000' deep & bottom out in Guilmette transition or porphyry. In the future, they may start drilling from the flats in the W & punch in at an angle to the E & then drift along the NW trending mineralized zone.

~~XXXXXXXX~~ Structure: The E side of the district (which is currently being drilled by Ag King) is underlain by are moderately east dipping sequence of Paleozoic limestone & shales which is offset by a number of small faults & intruded by the underlying porphyry. ---continued---

EXAMINER: DATE VISITED:

PROPERTY NAME: Ward Mining District (continued)

OTHER NAMES:

MINERAL COMMODITY(IES):

TYPE OF DEPOSIT:

ACCESSIBILITY:

OWNERSHIP:

PRODUCTION:

HISTORY:

County:

Mining District:

AMS Sheet:

Quad Sheet:

Sec. _____, T _____, R _____

Coordinate (UTM):

North _____ m

East _____ m

Zone _____

DEVELOPMENT:

ACTIVITY AT TIME OF EXAMINATION:

GEOLOGY: The structure on the W side of the district is more complex. Complicated faulting, including thrusts, occur over overturned beds. Jasperoid lenses & bodies outcrop along dikes & faults in the Joanna. Some Au & Ag are associated with the jasperoids.

Core mineralogy: The drill cores of the section of rock below the Chainman from the district show altered Pilot, Joanna & Guilmette. In measure near dikes or the main intrusive body, the Pilot is bleached & hornfelsed to the Albite-epidote facies & occassionally contains serpentine & talc minerals.

The JoAnna is altered to a white, med-grained, crystalline marble with minor jasperoid &/or breccias, which are interpreted as collapse features. In fact the thinner the JoAnna in a given core, the better the mineralization of the rock. Usually the JoAnna is ≈ 375' (nearby unaltered section) but in the skarn zones at Ward it ranges from 150'-8' thick. A bedding plane vein of pyrite & sphalerite ≈ 6 1/2' wide (34 oz/ton) has been found in several diff. locations between the Pilot & JoAnna contact.

The Guilmette is highly altered within the ore zone & characteristically has a "punky" look. Metamorphic minerals common in the contact zone are wollastinite, zoisite & garnet. The basal Builmette rocks intruded by the stock usually have a zone of massive andradite skarn.

Almost all of the mineralization occurs in the Guilmette - Joanna horizon & in the dikes & aplitic veins. The altered sediments often carry pyrite & sphalerite. Little mineralization is found above this horizon. The Chainman rocks contain epidote, but the Ely limestone is unaltered.

The cored porphyry has a fresh, unaltered appearance, altho the groundmass is propylitically altered to epidtoe, chlorite & very fine-grained pyrite. The intrusive is "dry" & contains no tourmaline or flourite. Moly is found only in the thin, quickly chilled ~~XXXXXX~~ margin of the body.

The dikes & veins contain pyrite-sphalerite-chalcopyrite & galena with lesser amounts of cuprite ç bornite. A few scattered veins run ≈ 6.5 oz/ton in chalcopyrite & pyrrhotite. The dikes & veins also contain talc & serpentine.

The richest mineralization occurs in the altered haloes around the dikes. The dikes are pre, syn & post mineralization as they cut mineralization are cut by mineralized veins & in some cases, are mineralized themselves. The number of small faults which offset them makes mining difficult.

Source of min.: The source of the mineralizaiton at Ward is unknown, but is thought to have come out of the Pilot or Chainman shales & not the porphyry (Isotope studies indicate ~~XXXXXXXXX~~ meteroic as opposed to juvenile H_2O was involved in the fm of the mineralized areas. The mineralization is probably related to silicification since an outcrop of mineralized

--------Continued----------

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PROPERTY NAME: Ward Mining District (continued)

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HISTORY:

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Mining District:

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Coordinate (UTM):

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Zone _____

DEVELOPMENT:

ACTIVITY AT TIME OF EXAMINATION:

GEOLOGY: jasperoid JoAnna Breccia grades into an unmineralized calcite breccia along strike. The mineralization/alteration of the rocks at ward resulted from in situ pryometasomatic alteration of calc-silicate rocks. The mineralized horizons have a hi F haloe of≈1%, with small anomalies of Be, & Te. In the hi-grade porphyry zone moly runs≈ .01 -006 ppm & sm runs 5-6 ppm. W was not found in any of the rocks.

REMARKS: No sample
Photos

REFERENCES: Tom L. Heidrick of Gulf Mins. has done very detailed geologic & structural maps of the area.

EXAMINER: Bentz/Smith/RBJ/Fortner

DATE VISITED: 8/81